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These few traces of the ancient race which preceded our Indians show that the mound builders never visited this region in large numbers, or made very permanent towns. They were probably some of the remote settlements on the outskirts of their civilization, represented by our pioneers, provided our population should cease to extend its advance—a few of their tribes who chose to live where free range of territory was more congenial to their habits than the more densely settled portions of the Mississippi and Ohio valleys, where so many of their large mounds are seen.

RECENT DISCOVERIES OF FOSSIL FOOTPRINTS IN KANSAS.

BY B. F. MUDGE.

About the 1st of July, in crossing Kansas avenue, Topeka, we noticed, on a slab of the flagging, clearly defined footprints of reptiles. There was no hesitancy in referring the stone to the quarries of Crane & Dodd, of Osage. Taking the next train to that place, and carefully examining the quarries, a mile apart, we were well rewarded for our trouble.

The flagging at the new quarry consists of four principal layers, respectively one and a half, two, three, and four inches in thickness, interlaid usually by thin seams of soft shale. The flagging is fine-grained sandstone of close texture, coming out in slabs sometimes ten feet by twenty-five.

At the old quarry, the layers are not so distinct. The slabs, as they are quarried, are frequently inclined to split in thin sheets, some of which are marked by footprints. The best of the smaller ones were thus obtained, giving a fine specimen of footprint and cast.

The deposit is just above the middle of the coal measures, and about a dozen feet above the coal seam worked at Carbondale and Osage. The slabs or layers containing the footprints afford but few fossils, although there are numerous fucoidal impressions with ripple-marks. But immediately above and below the flagging, are calcareous strata containing abundant remains of the usual marine fossils of the period.

We have selected thirty slabs containing footprints, for preservation, there being a few others too poor to pay for removal. Most of these contain but one set of tracks, but several contain two of different species, and one has four sets.

The most common footprints, represented by more than half of all that were found, were large, saurian-like tracks, in character and shape a little like Polemarchus gigans of Hitchcock. It differs in being but two-thirds as large, and in the proportional length of the toe and heel. In our species the toes are all nearly of the same length, five inches, and the heel four inches, making the total length nine inches. The width of the heel is five inches. There are some indications of a fourth short lateral toe. The length of the stride is from twenty to twenty-two inches. Width of the trackway, from center to center of the footprint, is from four to six inches. There are about twenty slabs marked by this species, some of which are very poor. The number of footprints on the slab varies from two to twenty.

The tracks of this species differ much in size, so much so that I was at first inclined to consider them of two species; but I now class them as old and young individuals. On the largest slab, the smaller (there being three rows of tracks) are half the size of the larger,.and it will be no great stretch of the imagination to suppose that in this case the mother was followed by her offspring.

Over two hundred footprints of this species were seen, and all found in the four-inch flagging. They are all casts. The outline of the foot in this species is indistinctly defined, rendering its description and identification very difficult. The reason that no direct footprints were discovered was very apparent. The layer on which the animal walked was a soft clay, which did not harden, but crumbled in removal of the layer above. But the latter being of fine sand and a small trace of lime, took the print of the footstep and hardened to stone. For sidewalks this layer is the most durable, and is in demand where large and firm slabs are desired. In several places on Kansas avenue, Topeka, the slabs show where the raised casts of the footprint have been taken off by the stone-mason to give an even surface. Their relative position can still be easily traced.

Another footprint is that of a smaller animal, the foot measuring by the toes about two inches in length — heel not discovered. Number of toes, four, the fourth being small and obscure. A lateral spur was found in a few instances. Length of the stride, twelve inches, and width of the trackway from center to center, six inches. These tracks were found on six slabs, and on several solitary pieces at three different quarries. Some were also obtained by splitting the larger slabs from the old quarries. The footprint and cast of the same track were, in such cases, obtained. In several instances the lobes of the toes were distinctly seen. The general impression left after a study of this species is, that the animal must have been a clumsy reptile, with some of the traits of both frog and salamander. The number of tracks seen on single slabs varied from one to sixteen. About one hundred and fifty tracks of this species were procured.

The best and most distinctly preserved tracks are those resembling the Cheirotherium. These are found at what is called the "Old Quarry." These tracks are very clear in the outline of the front toes, but the heel is obscure. The outline of the foot appears to have been four and a half to five inches wide, and in length five and a half. The length of the stride is from twenty one to twenty-two inches. The hind footprint usually covers the heel of the fore foot. We obtained both the true track and the cast. The width of the trackway is eleven and twelve inches, measuring from center to center. The front foot has four toes, the hind foot five, the fifth being short and perhaps rudimentary. The footprint shows that the animal in walking rested his weight mostly on the toes, as these are strongly and clearly impressed, while the heel can be traced with difficulty. In several instances the wrinkle of the skin could be seen. No trace of a claw was visible. In plumpness the toe resembles the Cheirotherium, the toes being more divergent. It also resembles the foot of the Saurotus primevus, found in the sub-carboniferous of Pennsylvania, but is clearly an animal differing from both. We procured twelve slabs of this species, and a few single tracks. From four to sixteen footprints were found on each slab, numbering in all about one hundred.

These footprints are as distinct and clear as the average of those found in the sandstone of the Connecticut valley. They are sufficiently perfect to give the characteristics of the feet of these animals and their modes of progression, from which they can be reconstructed.

We found also five small tracks somewhat like the above, measuring three-fourths of an inch in length by one and a fourth in breadth. This was not enough to decide the character of the animal.

On one slab are two prints very much like a mule's foot, or, rather, his shoe. A similiar mark has twice been described (in Europe and America), as a footprint; but recent investigations have decided that it is the impress of a fucoid or marine plant.

We have here four distinct species, all probably different from those previously discovered, from other parts of the world. They also are valuable from the fact that few footprints are found west of the Allegheny mountains. Their geological position down in the coal measures also adds to their scientific value. We have not given so detailed a description of them as is necessary for identification of species, as some of them will go to Yale College, and there be compared with their large collection, and Prof. Marsh will then proceed to assign their true paleontological character and name them. I have compared them with known footprints of the Connecticut valley, and have been surprised at their apparent resemblance ; yet, when we recollect that those are *triassic*, while ours are in the middle of the coal measures, it seems most probable that they are generically distinct, and will add new races to the earliest air-breathing animals of our globe.

REPORT ON THE BOTANY OF KANSAS FOR THE YEAR 1873.

BY J. H. CARRUTH.

During the past year I have devoted what time I could spare from other duties to a further examination of the Plants of Kansas, and herewith give the result. Some cases doubtful last year have been solved, and I have become acquainted with twenty or more of those given last year on the authority of Professors Snow and Hall.

The past year our corps of observers has been much increased. In addition to Prof. Snow, we have had Prof. Wherrell, of Leavenworth; Dr. Saunders, of Lawrence ; Mr. Popenoe, of Topeka ; and Dr. Watson, of Ellis ; to whom the proper credits will be given. The latter gentleman has given thirteen, none of which are found in Wood's Class Book or Gray's Manual.

It is sometimes asked : Of what use is botany to a farmer ? I have repeatedly known persons to set out wild grape vines, and look two or three years for fruit, when the blossoms had stamens or male organs only, and could never produce fruit. Some grape vines from seed have perfect blossoms ; that is, both stamens and pistils, and some have stamens only. But vines from cuttings always have the same kind of blossoms as the vine they were taken from.

A man once set a large garden full of strawberry plants, nearly all of which had pistils, or female organs only. He had plenty of blossoms, but no fruit. By putting a sufficient number of either perfect or staminate plants among them, he might have had fruit.

A lady once cut off the "false blossoms," staminate ones, from